
Nanogel star polymer architectures: a nanoparticle platform for modular programmable macromolecular self-assembly, intercellular transport, and dual-mode cargo delivery.

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Public Summary:

There is a growing demand for the simultaneous, site-localized delivery and expression of tandem functionality within the human body for many medical applications. Polymeric nanoparticle delivery vehicles are envisioned for delivery of therapeutic agents across cellular membranes. Currently, organic nanoparticle platforms under development for these purposes include liposomes, dendrimers, and micelles. Nanogel star polymers are an alternate class of organic nanoparticles for biomedical research purposes that are of interest, as they are fewer structural limitations than dendrimers and more dynamic stability than micelles and liposomes. However, nanogel star polymers, are among the most synthetically demanding of polymeric nanostructures to develop. This paper discusses different approaches to making nanogel star polymer architectures and presents a versatile and convenient approach to produce uniform, structurally versatile, water-soluble, unimolecular polymeric nanoparticles capable for up-loading various cargoes.

Scientific Abstract:

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